

We claim:

1. A method of determining in a volume of liquified gas in a cryogenic storage tank having a liquid space and a head space, comprising the steps of:

entering and storing the dimensions and orientation of the storage tank;

entering and storing the type of liquefied gas contained in said tank;

5 entering and storing a stratification coefficient;

storing a lookup table of conversion coefficients used to convert a head pressure value into an estimated average pressure value, said conversion coefficients being accessed according to the entered dimensions and orientation of the storage tank;

storing a lookup table of density constants, stored according to the estimated average
10 pressure, and liquid type;

measuring the differential pressure between the liquid space and the head space;

measuring the pressure at the head space;

calculating an estimated average pressure using the measured head pressure and the stratification coefficient;

15 reading a liquid density value from a look-up table of density constants using the
calculated estimated average pressure and the entered liquid type; and

computing in a liquid volume in said tank as a function of said differential pressure, liquid density tank dimensions, tank orientation, and type of liquefied gas.

[illegible]

2. The method of Claim 1, wherein the step of computing the liquid volume further comprises the step of displaying the liquid volume on a display.

3. The method of Claim 1, wherein the step of storing the dimensions of the storage tank comprises the step of storing a tank height and diameter.

4. The method of Claim 1, further comprising the steps of:
storing an alert volume; and
generating an alert signal if the calculated liquid volume is below the alert volume.

5. A system for displaying liquid volume of a cryogenic fluid stored in a cryogenic tank, the fluid stored within the tank, the tank containing a liquid space and a head space, the system comprising:

a differential pressure sensor coupled to the head space and to the liquid space for sensing a differential pressure between the liquid space and head space and generating a differential pressure signal as a function of the differential pressure;

a pressure sensor coupled to the head space for sensing a pressure of the head space;
an operator input interface for entering the dimensions of the container and the type of cryogenic fluid;

a nonvolatile memory coupled to the operator input interface, for storing the dimensions of the tank, the type of cryogenic fluid, tank dimension formulas, a look-up table containing

liquid density conversion constants for each of plural tank dimensions, and a look-up table containing cryogenic fluid densities for each of plural liquid types and plural pressure ranges;

15 a micro-controller coupled to the pressure sensor, the differential pressure sensor and the nonvolatile memory, said micro-controller reading from said nonvolatile memory a selected liquid density conversion constant corresponding to said stored dimensions of the container;

20 said micro-controller calculating an estimated average pressure as a difference between said head space pressure and said liquid density conversion constant, and reading from said nonvolatile memory a selected liquid density corresponding to said estimated average pressure and said liquid type;

said micro-controller calculating a liquid volume based upon the dimensions of the tank, the type of cryogenic fluid, the tank dimension formulas, and the cryogenic fluid densities; and a display coupled to the micro-controller for displaying the liquid volume.